Tierra Responses to Comments on Newark Bay Study Area Crab and Clam Data Report (Tierra Solutions, Inc., June 2016) October 24, 2016

Comment No.	Section	Page	Comment	Tierra Response
1	Text Section 2.0 "Sampling Design and Methodology"	PDF page 9	Please describe in Section 2.0 "Sampling Design and Methodology" that the Crab/Clam QAPP also includes the collection and analysis of forage fish tissue; however, the forage fish tissue data will be presented in the Fish Tissue Data Report.	The Crab/Clam QAPP does not include the collection and analysis of forage fish tissue; therefore, the requested text will not be added to the Crab and Clam Data Report.
2	Text Section 2.1 "Sampling Location"	PDF page 9	Please explain in the text that the crab samples collected from the geographical zones represent a composite for each zone and do not have coordinate data associated with the composite sample.	The following text will be added to the end of the first paragraph in Section 2.1: "Blue crab samples collected from the geographic zones represent a composite for each zone and do not have coordinate data associated with the composite sample."
3	Text Section 2.3 "Sample Processing, Homogenization and Analysis"	PDF page 10	Section 2.3 states that "Details regarding sample processing are included in the NBSA Environmental Sample Collection Report (Normandeau 2016)." Please note that a separate comment was submitted on the Environmental Sample Collection Report to request incorporation of a discussion on the tissue compositing activities at the field facility and at the laboratory. This information was not clearly discussed in the Environmental Sample Collection Report.	Details pertaining to sample processing are more properly addressed in the NBSA Environmental Sample Collection Report (Normandeau 2016). USEPA's comments on that report will be addressed. No change to this report is planned.
4	Text Section 3.0 "Results"	PDF page 14 (third paragraph)	Please consolidate the last three sentences for clarity. For example, "For sediment samples (any analyte) with a corresponding field duplicate, the parent sample and duplicate sample results were averaged and the average value employed in statistical data evaluations, as long as both values were detected concentrations. If only one of the two samples had a detected result, the detected concentration only was used in the data evaluations."	The last three sentences of the third paragraph in Section 3.0 will be replaced with the following text: "For sediment samples (any analyte) with a corresponding field duplicate, the parent sample and duplicate sample results were averaged. The average value was used in statistical data evaluations as long as both values were detected concentrations. If only one of the two samples had a detected result, only the detected concentration was used in the statistical data evaluations."

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5	General Table Comment and Appendix C tables where applicable	General Comments - Tables	A. Please revise Footnote 1 of Table 3-4 for clarity, for example "Only valid results were used in the statistical analyses. Valid results consist of data that were not rejected by the data validator." B. Please revise Note 1 of Table 3-4 for clarity, such as "Only detected values (after data validation) were included in the calculation of totals." C. Please check parameters listed under "Physical Properties" and provide further explanation, as appropriate. There are multiple references to percent moisture results (such as Water Content, Water Content ASTM D2216, Percent Moisture, and Moisture [water] Content). Also, please check units for water content results or clarify as needed (*i.e.*, percentages greater than 100 are reported). This comment also applies to the Appendix C tables. D. Please sort the grain size parameters from the largest sieve to the smallest sieve, ending with hydrometer readings. This comment also applies to the tables in Appendix C. E. Please add a footnote stating which PCB Aroclors are included in the '7-Aroclor Summation' versus the '9-Aroclor Summation.'	revised to read: "Only valid results were used in the statistical analyses. Valid results consist of data that were not rejected by the data validator." B. Note 1 of Tables 3-4 through 3-25 will be revised as follows: "Only detected values (after data validation) were included in the calculation of totals." C. The parameters under "Physical Properties" have been reviewed. The multiple references to percent moisture are correct as there were multiple analyses for percent moisture conducted and reported for the listed samples. For tissue, "Percent Moisture" was analyzed using USEPA Method 160.3 and "Water Content ASTM D2216" was analyzed using ASTM D-2216. "Percent Moisture" determined by USEPA Method 160.3 is calculated as the weight of the dry tissue divided by the weight of the wet tissue; the maximum percent moisture is 100%. "Water Content ASTM D2216" analyzed using ASTM D-2216 is calculated as the weight of the water divided by the weight of the dry tissue, which can result in moisture contents greater than 100%. For sediment, "Percent Moisture" and "Moisture (water) Content" were analyzed using USEPA Method 160.3 and "Water Content" and "Water Content ASTM D2216" were analyzed using ASTM D-2216. "Percent Moisture" and "Moisture (water) Content" determined by USEPA Method 160.3 are calculated as the weight of the dry sediment divided by the weight of the wet sediment; the maximum percent moisture is 100%. "Water Content" and "Water Content ASTM D2216" analyzed using ASTM D-2216 are calculated as the weight of the water divided by the weight of the dry sediment, which can result in moisture contents greater than 100%

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6	General Figure Comment	General Comments - Figures	A. The crab tissue contaminant concentration figures (e.g., Figure 3-1) include call-out boxes containing a color-coded row for each sample number, where a group of locations are clustered together on the figure. Please add explanatory text to the figures to make it clear that these boxes represent the crab composite samples and the color of each row represents the associated tissue residue sample concentration. It is recommended that an example call-out box be added to the figure key and each box be attached to an arrow (or arrow and bracket) pointing to the associated samples. B. Please revise the figures to label the study area boundary as the "Newark Bay Study Area Boundary" (rather than the "Phase I/II SI Study Area Boundary"). C. Please check the orientation of arrows associated with geographical labels so that they point to the correct feature. For example, the arrow labeled "Newark Bay" appears to point specifically to Station 127A in Figure 3-37. D. Please make the scale consistent between each set of figures, if feasible. For example, when comparing Figure 3-36 and Figure 3-7, Newark Bay is shown more prominently in Figure 3-37; more of the Lower Passaic River is depicted in Figure 3-36 and the bay occupies a smaller area on the page. E. Please label the Station Numbers consistently in the figures. For example, the clam tissue figures (Figures 3-28 through 3-36) present station numbers in the format 'NBN122A', whereas crab and sediment figure series use a truncated format (e.g., '122A'). F. When presenting a "total" concentration in a figure, please add a footnote stating how any potential non-detect concentrations were incorporated into the summation.	through 3-27: "5. Text boxes represent the crab composite samples and the color of each row represents the associated tissue residue sample concentration." Additionally, an example call-out box will be added to the figure legend. The locations of individual crabs that make up the composite samples were not tracked. Text boxes will be included on the figures as shown, but arrows cannot be added pointing to the associated samples. B. The study area boundary on all figures will be updated to "Newark Bay Study Area Boundary" rather than "Phase I/II SI Study Area Boundary". C. The geographic labels will be adjusted to point to the correct features on all figures. D. The scale of each figure will be adjusted so they are consistent. E. Station numbers will be modified so they all appear consistently on each figure. F. Total concentrations are summations of detected values only. A note indicating such will be added to each "total" figure.

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7	Table 2-1	PDF Page 19	Please add a footnote to Table 2-1 that no coordinates are available for the crab composites by geographical zone or list these sample types and stations with "NA" listed in the Northing and Easting columns.	A footnote will be added to Table 2-1 that states: "Crab samples collected from the geographic zones represent a composite for each zone and do not have coordinate data associated with the composite sample."
8	Appendix A	Tables – Footnote B	Please remove the reference to the 'Priority List Tab' from Footnote B in the tables at the beginning of Appendix A.	The reference to the "Priority List tab" will be removed from footnote B in the tables in Appendix A.
9	Appendix B	General Comment	Please add a note to the cover page of Appendix B stating that Protocol Modification Forms are presented in either the Clam-Crab Data Report (Appendix B) OR the Environmental Sample Collection Report (Appendix F). To avoid confusion, it is recommended that all of the Protocol Modification Forms be presented in one location.	The Protocol Modification Forms will be included with the Environmental Sample Collection Report, therefore Appendix B will be deleted and the remaining Appendices renamed accordingly.
10	Appendix C	General Comment	Please add the definition of each data qualifier applied in the Appendix C tables.	Data qualifier definitions will be added to each of the Appendix C tables.
11	Appendix F	General Comment	Please note that the word "data" is plural; please revise text of Appendix F accordingly.	Text will be revised accordingly.
12	Appendix F	General Comment on Sections 2.0 and 3.0	Please confirm that the tables in Section 2.0 are consistent with the information in Section 3.0. For example, the table on PDF page 459 on precision indicates that sediment VOCs were qualified due to precision. This information does not appear to be consistent with the VOC table on PDF page 474. Please check the tables for consistency.	The tables in Section 2.0 will be reviewed and if necessary revised to be consistent with the information in Section 3.0.
13	Appendix F	General Comment on Sections 2.0, 3.0, and 4.0	The tables in Section 3.0 summarize the reasons that data were qualified for non-compliance regarding precision, accuracy/bias contamination, overall accuracy/bias, and representativeness. It is unclear which of the major and/or minor data quality issues resulted in sensitivity issues (as discussion in Section 2.4) and more importantly, what major and/or minor data quality issues resulted in rejected data (as discussed in Section 2.7). The reviewer noticed that a discussion of rejected data was included in the conclusions (Section 4.0); this information should also be provided in the appropriate locations in Section 3.0.	Information will be added to each section to clearly identify the major and minor data quality issues. The text will identify any rejected results in the applicable sections.

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14	Appendix F	PDF page 456 (Section 1, Hardcopy page 1)	Please include in Section 1.0 "Introduction" a statement that the Crab/Clam QAPP also includes the collection and analysis of forage fish tissue; however, the forage fish tissue data are not presented in Appendix F. (We understand that they will be presented in the Fish Tissue Data Report.)	The Crab/Clam QAPP does not include the collection and analysis of forage fish tissue; therefore, the requested text will not be added to the Crab and Clam Data Report.
15	Appendix F	PDF page 456 (Section 1, Hardcopy page 1) and PDF page 467 (table in Section 2.7)	The number of clam and sediment sampling locations are equal (18 stations each). Please revise Section 1 "Introduction" to state the number of field samples only (or make a note that the number of samples listed includes quality control samples). A similar comment applies to Section 2.7 and the table on hard-copy page 12 (PDF page 467) – the number of sediment samples includes 18 field samples plus one field duplicate.	A verification statement will be added to Section 1.0 and Section 2.7 that indicates the sediment number includes quality control samples.
16	Appendix F	PDF page 457 (Section 2.1, Second Paragraph)	(1) Please remove the word "co-located." Sediment field duplicates represent two aliquots of material taken from the same composited sediment material and shipped blind from the field. (2) Please add another sentence to the paragraph as follows: "Field duplicates were only applicable to sediment samples. Due to limited clam and crab tissue mass, only laboratory replicates were collected for these tissue matrices. Field duplicates for the tissue matrix were included for fish tissue sampling, where more mass was available for quality control samples."	(2) The requested sentence will be added to Section 2.1.
17	Appendix F	Tables on PDF pages 459, 460, 461, and 465	(1) To prevent confusion, fill all blank cells with a symbol that is selected to denote that validation was completed but no data were qualified due to precision issues. (2) Revise the definition for the "x" symbol to include the data indicator, such as "data qualified due to precision during validation for this analytical group" for the table on PDF page 459.	blank cells. In addition, a footnote will be included to define the meaning of the "v." (2) The definition of the "x" symbol will be expanded as requested: "data qualified due to precision during validation for this analytical group"

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18	Appendix F	PDF page 462 (Section 2.4, hardcopy page 7)	Please add a note that the QAPP's PQLs were set equal to the laboratory achievable quantitation limit, and any dilution or adjustment in initial extraction mass (or final extract volume) by the laboratory would cause the quantitation limit to be higher than the "achievable quantitation limit". (The subsequent discussions in Section 2.4.1 are typical of laboratory standard operating procedures.)	The requested statement will be added to Section 2.4.
19	Appendix F	Table on PDF page 465 (hardcopy page 10)	Please confirm that the main reason that data were qualified for "representativeness" is holding time violations, according to the table header on PDF page 465 (hardcopy page 10).	Yes, data were qualified for "representativeness" because of holding time violations. No change to the report is planned as a result of this comment.
20	Appendix F	Tables on PDF pages 468 and 469	Please revise table titles to better explain the difference between information in the tables on PDF page 468 (hardcopy page 13) and PDF page 469 (hardcopy page 14). Please also discuss the table information in regard to the overall analytical completeness for clam, crab, and sediment provided in the text of Section 2.7 on PDF page 466.	Tables/statements in Section 2.7 will be revised/added to provide overall analytical completeness as requested.
21	Appendix F	Tables on PDF pages 472 and 473	The following comment addresses SVOCs but applies to other analytical groups. The quality issue described as "Non-compliant project specific surrogate recovery, as specified by USEPA Region 2" is classified as both a major data quality issue for SVOCs on PDF page 472 (hardcopy page 17) and a minor data quality issue on PDF page 473 (hardcopy page 18) for crab tissue. Please explain the difference. *The reviewer noted in the Conclusions (Section 4.0) that there is a statement that 53 SVOC results were rejected due to surrogate recovery, which matches the number of samples listed in the SVOC "major data quality issue" table on PDF page 472. The reviewer is concluding that a "major data quality issue" resulted in data rejection while a "minor data quality issue" resulted in J-flags. If this assumption is true, then please revise text to be clearer since there is no discussion of rejected data in Section 3.1.2 "Semivolatile Organic Compounds" on PDF page 472.*	Statements will be added to clarify major data quality issues when the same minor data quality issue was present. Also, statements will be added on rejected data in each applicable section.